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PENSOFT

An annotated bird checklist of community-managed lands in Kailash Sacred Landscape-India, Kumaon Himalaya

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Abstract

In the Indian Himalayan region, community-managed lands such as community-managed forests and agriculture lands play an important role in conserving native biodiversity. Our avifaunal surveys done between 2013 and 2016 recorded 205 species belonging to 52 families. Two species were first records from Pithoragarh district. Six species are classified as Threatened and five as Near Threatened in the IUCN Red List. Six are Schedule-I species under the Indian Wildlife (Protection) Act, 1972. In total, 63 migratory (local/altitudinal and long-range) and 81 Himalayan endemic species were observed. Overall, our observations reveal a niche providing both transient and perennial havens for resident and migrant avifauna in our study site's landscape. Our findings suggest that despite human persistence in the landscape, diversity within avifaunal guilds is rich in the community-managed lands. We recommend further research to focus on understanding the factors governing the bird distribution and co-occurrence in the landscape.

Keywords

Agricultural land, avifaunal diversity, community managed forests, globally threatened, Himalayan endemic, Western Himalaya

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Introduction

The Himalaya is one of the most biodiverse places on Earth (Olson and Dinnerstein 1998; Myers et al. 2000; Brooks et al. 2006) and has nearly 10% of the world's bird species and around 330 Important Bird Areas (Elsen et al. 2016; Pandit et al. 2014). Kailash Sacred Landscape (KSL) is a part of the Himalayan region and spread over China, Nepal, and India. The Indian part of the landscape is mostly within the Pithoragarh district of Uttarakhand state.

The area of Uttarakhand is 71% forested (Forest Survey of India 2019), with 14% of the forest managed by the local communities in collaboration with the Forest Department (Negi et al. 2008). These community-managed forests are locally known as "Van panchayats" (Negi et al. 2012). These forests are important for the maintenance of biodiversity and meeting the biomass demand of local people (Negi et al. 2012), but they are lesser known for their avifauna. The state hosts more than 50% of India's bird species (Mohan and Sondhi 2015), but bird-related studies in KSL-India (Pithoragarh district)

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have been few (Brooks 1869; Walton 1900; Whymper 1902a, 1902b; Koelz 1954; Tak and Sati 1994, 2006; Tak 1995; Sultana and Khan 2000; Raza 2005; Elsen et al. 2017) in comparison to nearby districts of the Kumaon region (Irby 1861; Sharpe 1890; Osmaston 1916; Hudson 1930; Ganguli 1966; Sridharan 1974; Narang and Lamba 1979; Yahya 1990; Sultana 2007; Ahmed 2010; Bhatt and Joshi 2011; Palita et al. 2011; Joshi et al. 2012; Shahabuddin et al. 2017; Menon et al. 2019). We have selected different community-managed lands in the lower reaches of KSL-India to document the avifauna, as these areas are relatively unexplored in comparison to the upper reaches.

Study Area

Kailash Sacred Landscape (KSL) is spread over 31,175 km^2 across three countries, and around 7,120 km^2 is India (KSL-India; Fig. 1), with 98% area in Pithoragarh and 2% in Bageshwar district. KSL-India harbours

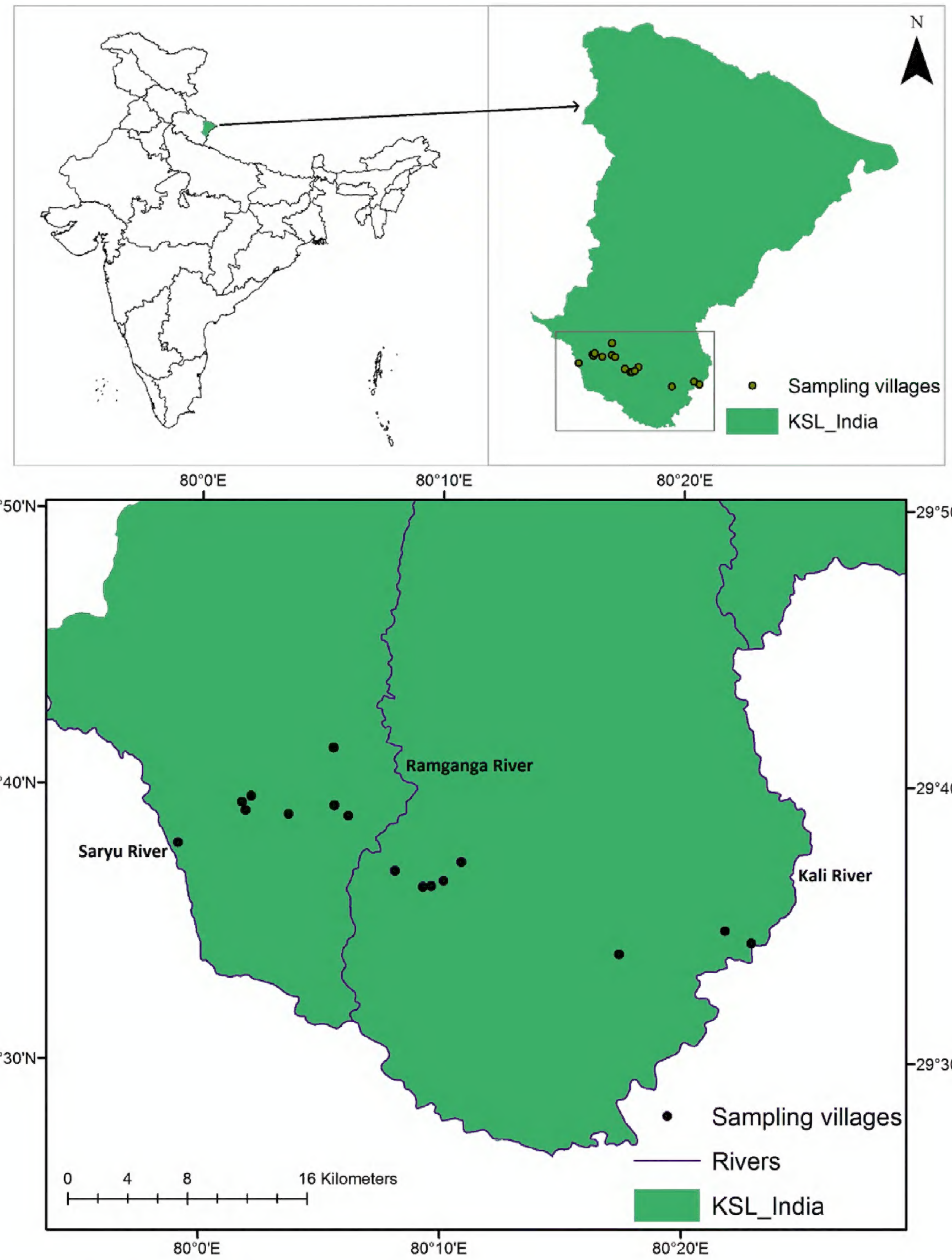

Figure 1. Sampling sites in KSL-India (Pithoragarh district).

diverse ecosystems, such as forests, grasslands, alpine meadows, wetlands, and agroecosystems along a wide altitudinal gradient of 350–7800 m a.s.l. Our study area is in Pithoragarh district, which is surrounded by Chamoli, Bageshwar, Almora, and Champawat districts to the west and south, and to the north and east, it shares international boundaries with China and Nepal, respectively. In the north-eastern side of Pithoragarh district there is a protected area; Askot Wildlife Sanctuary covers most of the upper reaches of the landscape. We surveyed in the community-managed lands of 17 villages and nearby areas in the lower reaches of the Pithoragarh district (500–2200 m a.s.l.); our study area covers nearly 300 km^2. The lower reaches of the landscape are mainly drained by the Saryu, Ramganga and Kali rivers. The vegetation in this area is mainly dominated by Subtropical mixed (*Emblica officinalis* Gaertn., *Toona cilata* M. Roem, *Macaranga pustulata* King ex. Hook. f., *Erythrina suberosa* Roxb.), Sal (*Shorea robusta* Gaertn.), Chir pine (*Pinus roxburghii* Sarg.), Banj Oak (*Quercus leucotrichophora* A. Camus and *Myrica esculenta* Buch.-Ham), and Temperate mixed forests (*Q. floribunda* Lindl. ex A. Camus, *Q. lanuginosa* Lam., *Rhododendron arboreum* J.E. Smith and *Cedrus deodara* (Lamb.) G. Don). Faunal diversity in the region is high, and mammal species such as *Panthera pardus fusca* (Meyer, 1794), *Ursus thibetanus laniger* (Pocock 1932), *Vulpus vulpus* (Linnaeus, 1758), *Muntiacus muntjak* (Zimmermann, 1780), and *Rusa unicolor* (Kerr, 1792) are commonly found. Among the avifauna, *Lophura leucomelanos* (Latham, 1790), *Arborophila torqueola* (Valenciennes, 1825), *Urocissa erythrorhyncha* (Boddaert, 1783), *Psilopogon virens* (Boddaert, 1783), and *Gyps himalayensis* Hume, 1869 are common in the landscape.

Methods

We conducted our survey between October 2013 and June 2016 in morning (07h00–11h00) and evening sessions (15h30–18h30) when birds are known to be more active (Trnka et al. 2006). Fixed-width point counts of 25 m radius (Bibby et al. 2000) and MacKinnon species richness methods (MacKinnon and Phillipps 1993) were used. A total of 597 point counts were conducted, of which 181 were done during winter, 272 during spring, and 145 in summer (119 in 2013, 225 in 2014, 136 in 2015, and 145 in 2016). Total 46 species richness lists were prepared, of which 15 were in winter, 18 in spring, and 13 in summer (6 in 2013, 17 in 2014, 10 in 2015, and 13 in 2016) (Table 1).

We maintained a distance of 150–200 m between each point to avoid double counting. All species seen or heard within 15 minutes were recorded (Menon et al. 2019). For MacKinnon species richness, we prepared a list of 20 distinct species by walking on existing trails in the community-managed forests and cultivated lands and once 20 species was reached, another list was prepared (Ahmed et al. 2019). Birds were observed by the aid of 8 × 42 Bushnell binoculars and identified using Grimmett et al. (2011). Some opportunistic sightings were also added to the list (Srinivasan et al. 2010; Shahabuddin et al. 2017).

Migration status to the species was assigned based on the field observations and Grimmett et al. (2011). Species frequently seen throughout the year were assigned as Resident, if seen during March to July only as a Summer visitor, between October and February only as Winter visitor, and for unconfirmed migration status, we followed Grimmet et al. (2011).

We used observations from both methods and assigned the abundance categories based on the number of individuals of a species encountered. These categories are Abundant (A), Common (C), Fairly common (Fc), and Rare (R) where, A ≥ 100, C = 60–99, Fc = 20–59, and R < 20.

Species that are recorded for the first time from the Pithoragarh district are marked with an asterisk (*).

Table 1. Sampling scheme along with geographic locations and major vegetation types.

Sampling villages	Latitude (°N)	Longitude (°E)	Altitude Range (m)	Major vegetation	Point counts/species richness lists
Lali	29.6558	080.0281	1600–1800	Oak, chir pine	62/5
Hanera	29.6508	080.0308	1650–1950	Temperate mixed	18/2
Rawal gaon	29.6595	080.0346	1400–1600	Temperate mixed, oak, chir pine	27/3
Kuntola	29.6310	079.9840	550–850	Sal, subtropical mixed	31/3
Simalkot	29.6489	080.0600	1500–1700	Oak, temperate mixed	20/2
Patal-bhuvaneshwar	29.6889	080.0913	1400–1700	Oak, temperate mixed	22/3
Pali	29.6543	080.0920	1000–1400	Chir pine, subtropical mixed	49/4
Boyal	29.6480	080.1018	750–1050	Sal, subtropical mixed	39/3
Jhulaghat	29.5724	080.3812	500–800	Sal, subtropical mixed	41/4
Munakot	29.5652	080.2897	1350–1500	Oak, temperate mixed	35/2
Majirkanda	29.5797	080.3628	1000–1500	Chir pine, temperate mixed	27/2
Jajurauli	29.6149	080.1343	650–1050	Chir pine, subtropical mixed	58/3
Bans	29.6052	080.1535	1000–1700	Oak, sal, chir pine	75/4
Nakot	26.6091	080.1772	1600–1800	Oak	26/2
Gurura	29.6204	080.1801	1600–1900	Oak, chir pine	34/2
Jagtar	29.6059	080.1594	1900–2150	Oak, temperate mixed	18/1
Sintoli	29.6090	080.1681	1650–1800	Oak	15/1

Results

We recorded 205 species belonging to 52 families. We report two species for the first time from the Pithoragarh district. Of the six Threatened species, three are Critically Endangered, two are Endangered, one is Vulnerable, and five are Near Threatened according to the IUCN Red List (IUCN 2020). Most of these threatened species belong to the family Accipitridae (Table 2). The Indian Wildlife (Protection) Act, 1972 provides protection to 114 species, and six of them are listed under Schedule I and are strictly protected (Table 2). Eighty-one species are Himalayan endemics, of which *Catreus wallichii* (Hardwicke, 1827) is endemic to western Himalaya and five species are endemic in western to central Himalaya (Birds of the World 2020) (Table 2). Nearly 30% of the recorded species are classified as local/altitudinal migratory species or long-range migratory species. Of the long-range migratory species, 31 are summer visitors, 28 are winter visitors, and four are passage migrants in the lower reaches of the landscape (Fig. 2).

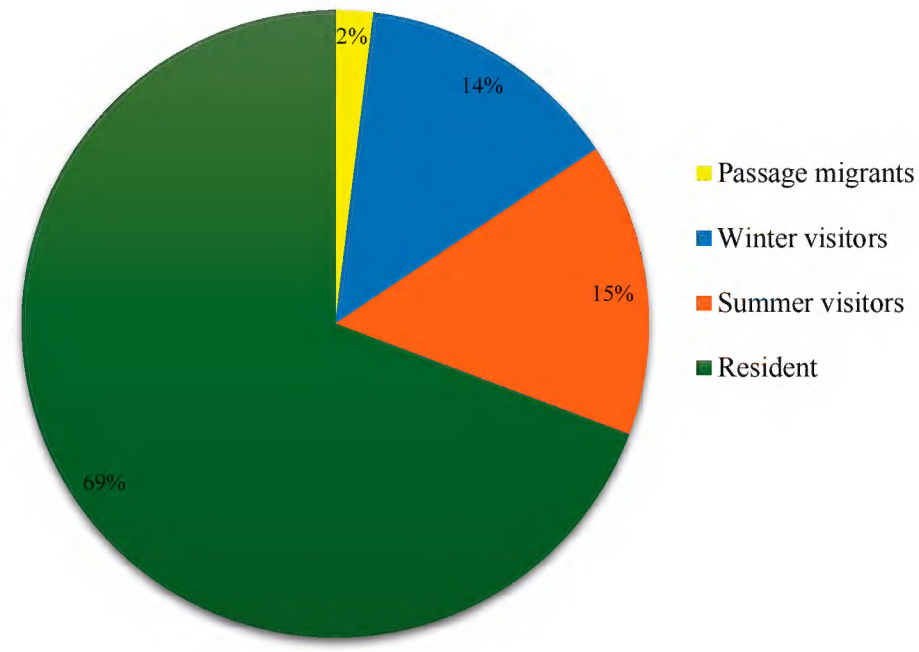

Figure 2. Bird migration status in lower reaches of KSL-India.

Table 2. List of bird species recorded from the KSL-India (Pithoragarh district). Abbreviations: HE = Himalayan endemic; H1 = endemic to western Himalaya; H2 = endemic to western and central Himalaya; H3 = endemic to Himalaya of south Asia (Afganistan, Pakistan east to Myanmar); H4 = endemic to Himalaya and occurring from Himalaya of South Asia to Indo-China and/or south-eastern China and/or South-east Asia; IUCN = International Union for Conservation of Nature; IWPA = Indian Wildlife (Protection) Act, 1972, Schedule; LC = Least Concern; NT = Near Threatened; VU = Vulnerable; EN = Endangered; CR = Critically Endangered; MS = migration status; R = resident; WV = winter visitors; LM = local migrant; SV = summer visitor; PV = passage visitor; LA = local abundance; R = rare; FC = fairly common; C = common; A = abundant.

Common name	Scientific name	HE	IUCN	IWPA	MS	LA
Family Anatidae						
*Common Teal	*Anas crecca* Linnaeus, 1758		LC	IV	WV	R
Family Phasianidae						
Black Francolin	*Francolinus francolinus* (Linnaeus, 1766)		LC		R	C
Cheer Pheasant	*Catreus wallichii* (Hardwicke, 1827)	H1	VU	I	R	R
Chukar Partridge	*Alectoris chukar* (J.E. Gray, 1830)		LC	IV	R	FC
Common Hill Partridge	*Arborophila torqueola* (Valenciennes, 1825)	H4	LC	IV	R	C
Kalij Pheasant	*Lophura leucomelanos* (Latham, 1790)	H4	LC	I	R	C
Family Columbidae						
Rock Dove	*Columba livia* J.F. Gmelin, 1789		LC		R	FC
Hill Pigeon	*Columba rupestris* Pallas, 1811		LC	IV	R	FC
Snow Pigeon	*Columba leuconota* Vigors, 1831	H4	LC	IV	R	FC
Common Wood Pigeon	*Columba palumbus* Linnaeus, 1758		LC	IV	WV/LM	R
Oriental Turtle Dove	*Streptopelia orientalis* (Latham, 1790)		LC	IV	R	C
Eurasian Collared Dove	*Streptopelia decaocto* (Frivaldszky, 1838)		LC	IV	R	R
Spotted Dove	*Spilopelia chinensis* (Scopoli, 1786)		LC	IV	R	A
Wedge-tailed Green Pigeon	*Treron sphenurus* (Vigors, 1832)	H4	LC	IV	R	FC
Asian Emerald Dove	*Chalcophaps indica* (Linnaeus, 1758)		LC	IV	R	FC
Family Apodidae						
Himalayan Swiftlet	*Aerodramus brevirostris* (Horsfield, 1840)	H4	LC		R	FC
Alpine Swift	*Tachymarptis melba* (Linnaeus, 1758)		LC		SV/LM	R
Little Swift	*Apus affinis* (J.E. Gray, 1830)		LC		R	FC
White-throated Needletail	*Hirundapus caudacutus* (Latham, 1801)		LC		SV	R
Family Cuculidae						
Asian Koel	*Eudynamys scolopaceus* (Linnaeus, 1758)		LC	IV	SV/LM	R
Large Hawk-Cuckoo	*Hierococcyx sparverioides* (Vigors, 1832)		LC	IV	R	FC
Common Cuckoo	*Cuculus canorus* Linnaeus, 1758		LC	IV	SV	FC
Family Rallidae						
*White-breasted Waterhen	*Amaurornis phoenicurus* (Pennant, 1769)		LC		R	R
Family Phalacrocoracidae						
Little Cormorant	*Microcarbo niger* (Vieillot, 1817)		LC	IV	R	FC
Great Cormorant	*Phalacrocorax carbo* (Linnaeus, 1758)		LC	IV	PV/LM	R
Indian Cormorant	*Phalacrocorax fuscicollis* Stephens, 1826		LC	IV	WV/LM	R

Common name	Scientific name	HE	IUCN	IWPA	MS	LA
Family Charadriidae						
River Lapwing	*Vanellus duvaucelii* (R. Lesson, 1826)		NT		R	R
Red-wattled Lapwing	*Vanellus indicus* (Boddaert, 1783)		LC		R	FC
Family Scolopacidae						
Common Sandpiper	*Actitis hypoleucos* (Linnaeus, 1758)		LC	IV	WV/LM	R
Family Accipitridae						
Bearded Vulture	*Gypaetus barbatus* (Linnaeus, 1758)		NT	I	R	C
Egyptian Vulture	*Neophron percnopterus* (Linnaeus, 1758)		EN	IV	SV/LM	C
Red-headed Vulture	*Sarcogyps calvus* (Scopoli, 1786)		CR	IV	R	R
Himalayan Vulture	*Gyps himalayensis* Hume, 1869		NT	IV	R	A
White-rumped Vulture	*Gyps bengalensis* (J.F. Gmelin, 1788)		CR	I	R	R
Slender-billed Vulture	*Gyps tenuirostris* G.R. Gray, 1844	H4	CR	I	R	R
Griffon Vulture	*Gyps fulvus* (Hablizl, 1783)		LC	IV	WV	FC
Cinereous Vulture	*Aegypius monachus* (Linnaeus, 1766)		NT	IV	WV	R
Crested Serpent Eagle	*Spilornis cheela* (Latham, 1790)		LC		R	FC
Mountain Hawk-Eagle	*Nisaetus nipalensis* Hodgson, 1836		LC		R	C
Black Eagle	*Ictinaetus malaiensis* (Temminck, 1822)		LC		R	FC
Steppe Eagle	*Aquila nipalensis* Hodgson, 1833		EN		WV	C
Golden Eagle	*Aquila chrysaetos* (Linnaeus, 1758)		LC		R	FC
Bonelli's Eagle	*Aquila fasciata* Vieillot, 1822		LC		R	R
Pallid Harrier	*Circus macrourus* (Gmelin, SG, 1770)		NT		PV	R
Shikra	*Accipiter badius* (J.F. Gmelin, 1788)		LC		R	FC
Eurasian Sparrowhawk	*Accipiter nisus* (Linnaeus, 1758)		LC		R	FC
Black Kite	*Milvus migrans* (Boddaert, 1783)		LC		R	A
Himalayan Buzzard	*Buteo burmenicus* Hume, 1875	H3	LC		WV/LM	FC
Upland Buzzard	*Buteo hemilasius* Temminck & Schlegel, 1845		LC		WV/LM	R
Family Falconidae						
Common Kestrel	*Falco tinnunculus* Linnaeus, 1758		LC	IV	R	C
Peregrine Falcon	*Falco peregrinus* Tunstall, 1771		LC	I	R	FC
Family Strigidae						
Brown Hawk Owl	*Ninox scutulata* (Ruffles, 1822)		LC	IV	R	R
Collared Owlet	*Glaucidium brodiei* (Burton, 1836)	H4	LC	IV	R	R
Asian Barred Owlet	*Glaucidium cuculoides* (Vigors, 1830)	H4	LC	IV	R	FC
Jungle Owlet	*Glaucidium radiatum* (Tickell, 1833)		LC	IV	R	R
Mountain Scops Owl	*Otus spilocephalus* (Blyth, 1846)	H4	LC	IV	R	FC
Brown Wood Owl	*Strix leptogrammica* Temminck, 1832		LC	IV	R	R
Family Picidae						
Speckled Piculet	*Picumnus innominatus* Burton, 1836		LC	IV	R	FC
Rufous Woodpecker	*Micropternus brachyurus* (Vieillot, 1818)		LC	IV	R	R
Greater Yellow-naped Woodpecker	*Chrysophlegma flavinucha* (Gould, 1834)		LC	IV	R	FC
Lesser Yellow-naped Woodpecker	*Picus chlorolophus* Vieillot, 1818		LC	IV	R	R
Grey-headed Woodpecker	*Picus canus* J.F. Gmelin, 1788		LC	IV	R	FC
Scaly-bellied Woodpecker	*Picus squamatus* Vigors, 1831	H2	LC	IV	R	FC
Grey-capped Pygmy Woodpecker	*Yungipicus canicapillus* (Blyth, 1845)		LC	IV	R	R
Brown-fronted Woodpecker	*Dendrocoptes auriceps* (Vigors, 1831)	H2	LC	IV	R	C
Yellow-fronted Woodpecker	*Leiopicus mahrattensis* (Latham, 1801)		LC	IV	R	R
Himalayan Woodpecker	*Dendrocopos himalayensis* (Jardine & Selby, 1831)	H2	LC	IV	R	R
Family Megalaimidae						
Great barbet	*Psilopogon virens* (Boddaert, 1783)	H4	LC	IV	R	A
Blue-throated barbet	*Psilopogon asiaticus* (Latham, 1790)	H4	LC	IV	R	C
Family Upupidae						
Common Hoopoe	*Upupa epops* Linnaeus, 1758		LC		SV/LM	FC
Family Meropidae						
Green Bee-eater	*Merops orientalis* Latham, 1801		LC		R	FC
Chestnut-headed Bee-eater	*Merops leschenaulti* Vieillot, 1817		LC		SV/LM	R
Family Coraciidae						
Indian Roller	*Coracias benghalensis* (Linnaeus, 1758)		LC	IV	R	R
Family Alcedinidae						
Common Kingfisher	*Alcedo atthis* (Linnaeus, 1758)		LC	IV	R	R
Crested Kingfisher	*Megaceryle lugubris* (Temminck, 1834)		LC		R	FC
White-throated Kingfisher	*Halcyon smyrnensis* (Linnaeus, 1758)		LC	IV	R	FC
Family Psittaculidae						
Slaty-headed Parakeet	*Psittacula himlayana* (R. Lesson, 1831)	H3	LC	IV	R	A

Common name	Scientific name	HE	IUCN	IWPA	MS	LA
Plum-headed Parakeet	*Psittacula cyanocephala* (Linnaeus, 1766)		LC	IV	R	C
Rose-ringed Parakeet	*Psittacula krameri* (Scopoli, 1769)		LC	IV	R	R
Family Campephagidae						
Long-tailed Minivet	*Pericrocotus ethologus* Bangs & J.C. Phillips, 1914	H4	LC	IV	R	C
Scarlet Minivet	*Pericrocotus speciosus*(Latham, 1790)		LC	IV	R	R
Large Cuckooshrike	*Coracina macei* (R. Lesson, 1831)		LC		R	R
Family Oriolidae						
Maroon Oriole	*Oriolus traillii* (Vigors, 1832)	H4	LC	IV	R	R
Indian Golden Oriole	*Oriolus kundoo* (Sykes, 1832)		LC	IV	SV/LM	R
Family Dicruridae						
Ashy Drongo	*Dicrurus leucophaeus* Vieillot, 1817		LC	IV	SV/LM	C
Crow-billed Drongo	*Dicrurus annectens* (Hodgson, 1836)	H4	LC	IV	SV	R
Hair-crested Drongo	*Dicrurus hottentottus* (Linnaeus, 1766)		LC	IV	R	C
Family Rhipiduridae						
White-throated Fantail	*Rhipidura albicollis* (Vieillot, 1818)		LC		R	FC
Family Stenostiridae						
Yellow-bellied Fairy-fantail	*Chelidorhynx hypoxanthus* (Blyth, 1843)	H4	LC		WV/LM	FC
Grey-headed Canary-flycatcher	*Culicicapa ceylonensis* (Swainson, 1820)		LC	IV	SV/LM	FC
Family Laniidae						
Long-tailed Shrike	*Lanius schach* Linnaeus, 1758		LC		SV/LM	C
Grey-backed Shrike	*Lanius tephronotus* (Vigors, 1831)	H4	LC		SV/LM	R
Family Corvidae						
Rufous Treepie	*Dendrocitta vagabunda* (Latham, 1790)		LC	IV	R	R
Grey Treepie	*Dendrocitta formosae* Swinhoe, 1863		LC	IV	R	C
Yellow-billed Blue Magpie	*Urocissa flavirostris* (Blyth, 1846)	H3	LC	IV	R	FC
Red-billed Blue Magpie	*Urocissa erythrorhyncha* (Boddaert, 1783)	H4	LC	IV	R	A
Eurasian Jay	*Garrulus glandarius* (Linnaeus, 1758)		LC	IV	R	R
Black-headed Jay	*Garrulus lanceolatus* Vigors, 1830	H2	LC	IV	R	C
House Crow	*Corvus splendens* (Vieillot, 1817)		LC	V	R	R
Large-billed Crow	*Corvus macrorhynchos* (Wagler, 1827)		LC		R	A
Family Monarchidae						
Indian Paradise-flycatcher	*Terpsiphone paradisi* (Linnaeus, 1758)		LC		SV/LM	FC
Family Dicaeidae						
Fire-breasted Flowerpecker	*Dicaeum ignipectus* (Blyth, 1843)	H4	LC	IV	R	FC
Family Nectariniidae						
Purple Sunbird	*Cinnyris asiaticus* (Latham, 1790)		LC	IV	SV/LM	FC
Fire-tailed Sunbird	*Aethopyga ignicauda* (Hodgson, 1836)	H3	LC	IV	R	R
Black-throated Sunbird	*Aethopyga saturata* (Hodgson, 1836)	H4	LC	IV	R	FC
Crimson Sunbird	*Aethopyga siparaja* (Raffles, 1822)		LC	IV	SV/LM	R
Green-tailed Sunbird	*Aethopyga nipalensis* (Hodgson, 1836)	H4	LC	IV	R	FC
Family Irenidae						
Golden-fronted Leafbird	*Chloropsis aurifrons* (Temminck, 1829)		LC		R	R
Orange-bellied Leafbird	*Chloropsis hardwickii* (Jardine & Selby, 1830)	H4	LC		R	FC
Family Prunellidae						
Rufous-breasted Accentor	*Prunella strophiata* (Blyth, 1843)	H4	LC		R	FC
Black-throated Accentor	*Prunella atrogularis* (J.F. Brandt, 1843)		LC		WV	FC
Family Estrildidae						
White-rumped Munia	*Lonchura striata* (Linnaeus, 1766)		LC	IV	R	FC
Scaly-breasted Munia	*Lonchura punctulata* (Linnaeus, 1758)		LC	IV	R	R
Family Passeridae						
House Sparrow	*Passer domesticus* (Linnaeus, 1758)		LC		R	C
Russet Sparrow	*Passer cinnamomeus* (Gould, 1836)		LC		R	C
Family Motacillidae						
Olive-backed Pipit	*Anthus hodgsoni* Richmond, 1907		LC		WV/LM	R
Rosy Pipit	*Anthus roseatus* Blyth, 1847	H4	LC	IV	WV/LM	FC
Paddyfield Pipit	*Anthus rufulus* Vieillot, 1818		LC	IV	R	R
Grey wagtail	*Motacilla cinerea* Tunstall, 1771		LC		SV/LM	FC
White-browed Wagtail	*Motacilla maderaspatensis* J.F. Gmelin, 1789		LC		R	R
White Wagtail	*Motacilla alba* Linnaeus, 1758		LC		PV/LM	FC
Family Fringillidae						
Common rosefinch	*Carpodacus erythrinus* (Pallas, 1770)		LC	IV	WV/LM	FC
Pink-browed Rosefinch	*Carpodacus rodochroa* (Vigors, 1831)	H3	LC		WV/LM	R
Dark-breasted Rosefinch	*Procarduelis nipalensis* (Hodgson, 1836)	H4	LC	IV	WV/LM	FC

Common name	Scientific name	HE	IUCN	IWPA	MS	LA
Yellow-breasted Greenfinch	*Chloris spinoides* (Vigors, 1831)	H3	LC	IV	WV/LM	C
Family Emberizidae						
Crested Bunting	*Emberiza lathami* (Gray, JE, 1831)		LC	IV	WV/LM	FC
Rock Bunting	*Emberiza cia* (Linnaeus, 1766)		LC	IV	R	C
Family Paridae						
Green-backed Tit	*Parus monticolus* Vigors, 1831	H4	LC	IV	R	C
Cinereous Tit	*Parus cinereus* Vieillot, 1818		LC	IV	R	C
Black-lored Tit	*Machlolophus xanthogenys* (Vigors, 1831)	H3	LC	IV	R	C
Family Cisticolidae						
Striated Prinia	*Prinia crinigera* Hodgson, 1836	H4	LC		R	FC
Grey-breasted Prinia	*Prinia hodgsonii* Blyth, 1844		LC		R	C
Common Tailorbird	*Orthotomus sutorius* (Pennant, 1769)		LC		R	R
Family Hirundinidae						
Red-rumped Swallow	*Cecropis daurica* (Laxmann, 1769)		LC		R	C
Barn Swallow	*Hirundo rustica* Linnaeus, 1758		LC		SV/LM	C
Family Pycnonotidae						
Ashy Bulbul	*Hemixos flavala* Blyth, 1845	H4	LC	IV	R	R
Mountain Bulbul	*Ixos mcclellandii* (Horsfield, 1840)	H4	LC	IV	R	R
Black Bulbul	*Hypsipetes leucocephalus* (J.F. Gmelin, 1789)	H4	LC	IV	R	C
Himalayan Bulbul	*Pycnonotus leucogenys* (Gray, JE, 1835)	H3	LC	IV	R	A
Red-vented Bulbul	*Pycnonotus cafer* (Linnaeus, 1766)		LC	IV	R	A
Family Phylloscopidae						
Hume's Leaf Warbler	*Phylloscopus humei* (W.E. Brooks, 1878)		LC		SV/LM	C
Lemon-rumped Warbler	*Phylloscopus chloronotus* (J.E. Gray & G.R. Gray, 1847)	H3	LC		WV/LM	C
Buff-barred Warbler	*Phylloscopus pulcher* Blyth, 1845	H4	LC		WV/LM	R
Tickell's Leaf Warbler	*Phylloscopus affinis* (Tickell, 1833)		LC		WV/LM	FC
Greenish Leaf Warbler	*Phylloscopus trochiloides* (Sundevall, 1837)		LC		PV/LM	R
Blyth's Leaf Warbler	*Phylloscopus reguloides* (Blyth, 1842)	H4	LC		SV/LM	R
Grey-hooded Leaf Warbler	*Phylloscopus xanthoschistos* (J.E. Gray & G.R. Gray, 1847)	H3	LC		R	A
Grey-sided bush Warbler	*Cettia brunnifrons* (Hodgson, 1845)	H4	LC		WV/LM	FC
Black-faced Warbler	*Abroscopus schisticeps* (J.E. Gray & G.R. Gray, 1847)	H4	LC		R	FC
Aberrant bush Warbler	*Horornis flavolivaceus* (Blyth, 1845)	H4	LC		R	R
Family Aegithalidae						
Black-throated Tit	*Aegithalos concinnus* (Gould, 1855)	H4	LC	IV	R	C
Family Zosteropidae						
Stripe-throated Yuhina	*Yuhina gularis* Hodgson, 1836	H4	LC		R	FC
Whiskered Yuhina	*Yuhina flavicollis* Hodgson, 1836	H4	LC		R	R
Oriental White-eye	*Zosterops palpebrosus* (Temminck, 1824)		LC	IV	R	C
Family Timaliidae						
Streak-breasted Scimitar Babbler	*Pomatorhinus ruficollis* Hodgson, 1836		LC	IV	R	R
Rusty-cheeked Scimitar Babbler	*Erythrogenys erythrogenys* (Vigors, 1831)	H3	LC	IV	R	FC
Black-chinned Babbler	*Cyanoderma pyrrhops* (Blyth, 1844)	H2	LC	IV	R	C
Family Leiothrichidae						
Striated Laughingthrush	*Grammatoptila striata* (Vigors, 1831)	H3	LC	IV	R	FC
Jungle babbler	*Argya striata* (Dumont, 1823)		LC	IV	R	C
Rufous-chinned Laughingthrush	*Ianthocincla rufogularis* (Gould, 1835)	H3	LC	IV	R	FC
White-throated Laughingthrush	*Pterorhinus albogulris* (Gould, 1836)	H4	LC	IV	R	C
White-crested Laughingthrush	*Garrulax leucolophus* (Hardwicke, 1816)	H4	LC	IV	R	C
Streaked Laughingthrush	*Trochalopteron lineatum* (Vigors, 1831)	H3	LC	IV	R	A
Rufous Sibia	*Heterophasia capistrata* (Vigors, 1831)	H3	LC		R	C
Blue-winged Minla	*Actinodura cyanouroptera* (Hodgson, 1837)	H4	LC		R	R
Chestnut-tailed Minla	*Actinodura strigula* (Hodgson, 1837)	H4	LC		R	FC
Family Certhiidae						
Bar-tailed Treecreeper	*Certhia himalayana* Vigors, 1832		LC		R	C
Family Sittidae						
Chestnut-bellied Nuthatch	*Sitta cinnamoventris* Blyth, 1842	H4	LC		R	C
Velvet-fronted Nuthatch	*Sitta frontalis* Swainson, 1820		LC		R	R
Wallcreeper	*Tichodroma muraria* (Linnaeus, 1766)		LC		WV/LM	FC
Family Sturnidae						
Chestnut-tailed Starling	*Sturnia malabarica* J.F. Gmelin, 1789)		LC	IV	SV/LM	R
Common Myna	*Acridotheres tristis* (Linnaeus, 1766)		LC	IV	R	A
Jungle Myna	*Acridotheres fuscus* (Wagler, 1827)		LC	IV	R	FC
Spot-winged Starling	*Saroglossa spiloptera* (Vigors, 1831)	H4	LC		SV/LM	R

Common name	Scientific name	HE	IUCN	IWPA	MS	LA
Family Cinclidae						
Brown dipper	*Cinclus pallasii* Temminck, 1820		LC		R	FC
Family Muscicapidae						
Oriental Magpie Robin	*Copsychus saularis* (Linnaeus, 1758)		LC		R	FC
Golden Bush-robin	*Tarsiger chrysaeus* Hodgson, 1845	H4	LC		R	R
Himalayan Bush-robin	*Tarsiger rufilatus* (Hodgson, 1845)	H4	LC		R	FC
Dark-sided Flycatcher	*Muscicapa sibirica* J.F. Gmelin, 1789		LC	IV	SV/LM	FC
Blue-throated Flycatcher	*Cyornis rubeculoides* (Vigors, 1831)		LC	IV	SV/LM	R
Rufous-bellied Niltava	*Niltava sundara* Hodgson, 1837	H4	LC		R	FC
Small Niltava	*Niltava macgrigoriae* (Burton, 1836)	H4	LC		R	FC
Verditer Flycatcher	*Eumyias thalassinus* (Swainson, 1838)		LC	IV	SV/LM	C
Little Forktail	*Enicurus scouleri* Vigors, 1832	H4	LC		R	R
Slaty-backed Forktail	*Enicurus schistaceus* (Hodgson, 1836)	H4	LC		R	FC
Spotted Forktail	*Enicurus maculatus* Vigors, 1831	H4	LC		R	FC
Blue Whistling-thrush	*Myophonus caeruleus* (Scopoli, 1786)	H4	LC		R	A
Rusty-tailed Flycatcher	*Ficedula ruficauda* (Swainson, 1838)		LC	IV	SV/LM	FC
Rufous-gorgeted Flycatcher	*Ficedula strophiata* (Hodgson, 1837)	H4	LC	IV	R	R
Ultramarine Flycatcher	*Ficedula superciliaris* (Jerdon, 1840)		LC	IV	SV/LM	FC
Slaty-blue Flycatcher	*Ficedula tricolor* (Hodgson, 1845)	H4	LC	IV	SV/LM	FC
Blue-fronted Redstart	*Phoenicurus frontalis* Vigors, 1831	H4	LC		WV/LM	C
Blue-capped Redstart	*Phoenicurus coeruleocephala* (Vigors, 1831)		LC		R	FC
White-capped Water Redstart	*Phoenicurus leucocephalus* Vigors, 1831	H4	LC		R	C
Plumbeous Water Redstart	*Phoenicurus fuliginosus* Vigors, 1831	H4	LC		R	C
Black Redstart	*Phoenicurus ochruros* (S.G. Gmelin, 1774)		LC		WV/LM	FC
Blue-capped Rock-thrush	*Monticola cinclorhyncha* (Vigors, 1831)		LC		SV/LM	R
Chestnut-bellied Rock-thrush	*Monticola rufiventris* (Jardine & Selby, 1833)	H4	LC		R	FC
Siberian Stonechat	*Saxicola maurus* (Pallas, 1773)		LC		WV/LM	FC
Pied Bushchat	*Saxicola caprata* (Linnaeus, 1766)		LC		SV/LM	R
Grey Bushchat	*Saxicola ferreus* J.E. Gray & G.R. Grey, 1847	H4	LC		R	C
Variable Wheatear	*Oenanthe picata* (Blyth, 1847)		LC		WV	R
Family Turdidae						
Long-billed Thrush	*Zoothera monticola* Vigors, 1832	H3	LC	IV	SV/LM	R
Grey-winged Blackbird	*Turdus boulboul* (Latham, 1790)	H4	LC		R	C
Black-throated Thrush	*Turdus atrogularis* Jarocki, 1819		LC	IV	WV	FC

Family Anatidae

***Anas crecca* Linnaeus, 1758**
Common Teal
Figure 3A

Observations. INDIA • Uttarakhand; Pithoragarh district; Bin block; Jajurauli; 29.6282°N 80.1229°E; alt. 630 m a.s.l.; 28 Nov. 2015.

Identification. Males were identified by the chestnut head and green band behind eyes, and the white stripe along with the scapulars. Females were identified by the uniform head and prominent white streak at the side of under tail coverts. If a pale loral spot and dark cheek bar were lacking, then we identified birds as a female of *Anas querquedula*.

Family Rallidae

***Amaurornis phoenicurus* (Pennant, 1769)**
White-breasted Waterhen
Figure 3B

Observations. INDIA • Uttarakhand; Pithoragarh district; Bin block; Bans; 29.6228°N, 80.1391°E; alt. 990 m a.s.l.; 14 Apr. 2014 • Bin block; Jajurauli; 29.6208, 80.1217; alt. 850 m a.s.l.; 13 Feb. 2016.

Identification. The species was readily identified by its grey upperparts and white face, foreneck, and breast. Bill and legs are greenish-yellow, and the upper mandible has a reddish base.

Family Accipitridae

***Sarcogyps calvus* (Scopoli, 1786)**
Red-headed Vulture
Figure 3C

Observation. INDIA • Uttarakhand; Pithoragarh district; Gangolihat block; Hanera; 29.6505°N, 80.0295°E; alt. 1800 m a.s.l.; 3 Nov. 2013 • Lali; 29.6585°N 80.0274°E; alt. 1720 m a.s.l.; 16 Nov. 2013 • Kuntola; 29.6338°N, 79.9844°E; alt.790 m a.s.l.; 18 Nov. 2013 • Bin Block; Bans; 29.6082°N 80.1392°E; alt. 1400 m a.s.l.; 10 Feb. 2016 • Nakot; 29.6082°N, 80.17764°E; alt. 1690 m a.s.l.; 12 Mar. 2016.

***Gyps bengalensis* (J.F. Gmelin, 1788)**
White-rumped Vulture
Figure 3D

Observations. INDIA • Uttarakhand; Pithoragarh district; Gangolihat block; Kuntola; 29.6338°N, 79.9844°E; alt.790 m a.s.l.; 18 Nov. 2013 • Munakot block; Majir-

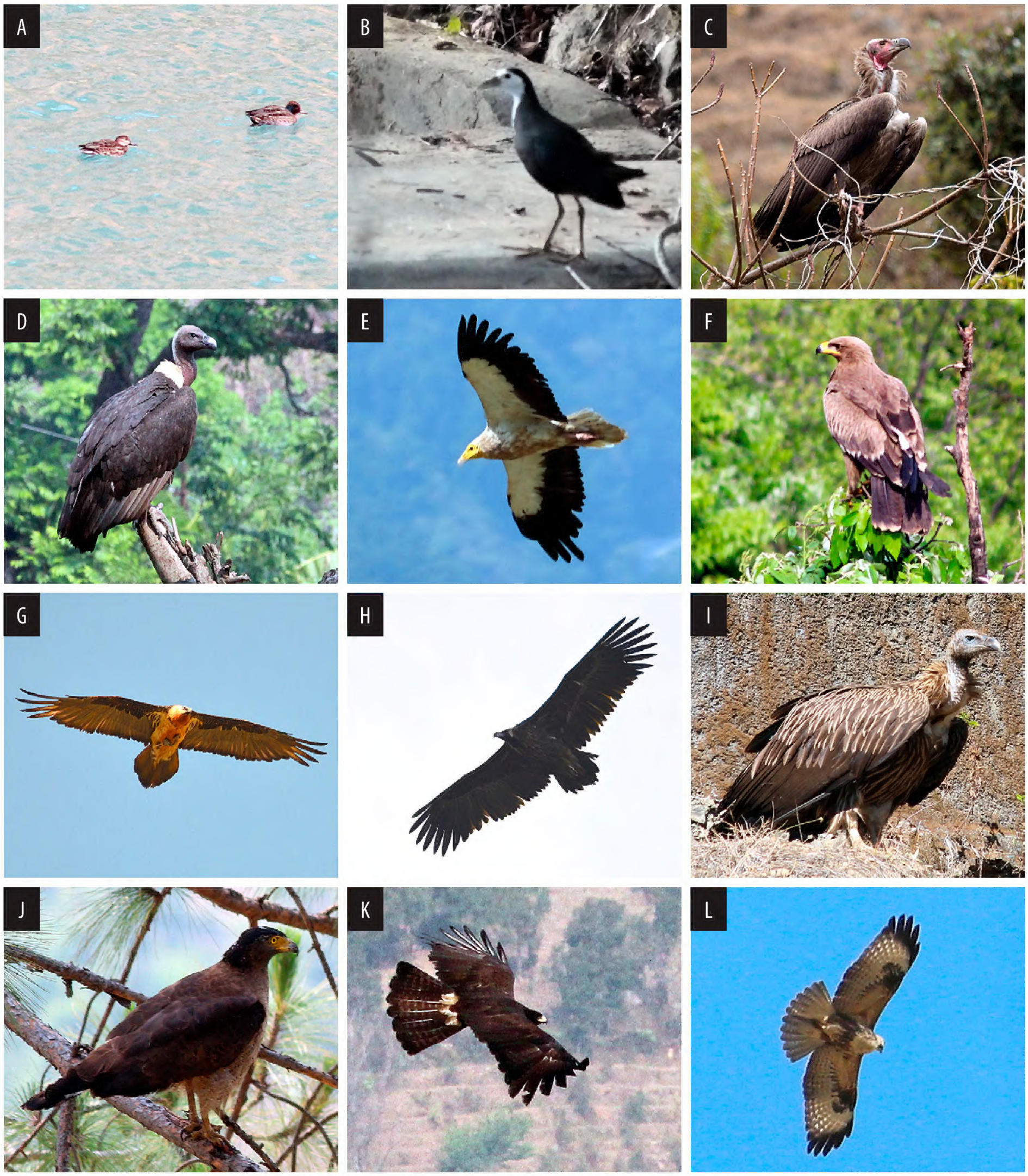

Figure 3. Birds recorded from the KSL-India (Pithoragarh district). **A.** *Anas crecca*. **B.** *Amaurornis phoenicurus*. **C.** *Sarcogyps calvus*. **D.** *Gyps bengalensis*. **E.** *Neophron percnopterus*. **F.** *Aquila nipalensis*. **G.** *Gypaetus barbatus*. **H.** *Aegypius monachus*. **I.** *Gyps himalayensis*. **J.** *Spilornis cheela*. **K.** Ictinaetus malaiensis. **L.** *Buteo hemilasius*.

kanda; 29.5783°N, 80.3663°E; alt. 1340 m a.s.l.; 3 Apr. 2014 • Munakot; 29.5652°N, 80.2897°E; alt. 1500 m a.s.l.; 8 Apr. 2014 • Jhulaghat; 29.5746°N 80.3826°E; alt. 590 m a.s.l.; 4 Oct. 2015.

***Neophron percnopterus* (Linnaeus, 1758)**
Egyptian Vulture
Figure 3E

Observations. INDIA • Uttarakhand; Pithoragarh district; Munakot block; Jhulaghat; 29.5746°N 80.3826°E; alt. 590 m a.s.l.; 8 Oct. 2015 • Bin Block; Bans; 29.6082°N 80.1391°E; alt. 1400 m a.s.l.; 10 Feb. 2016 • Nakot; 29.6082°N, 80.1776°E; alt. 1690 m a.s.l.; 19 Mar. 2016.

***Aquila nipalensis* Hodgson, 1833**
Steppe Eagle
Figure 3F

Observations. INDIA • Uttarakhand; Pithoragarh district; Munakot block; Munakot; 29.5652°N, 80.2897°E; alt. 1500 m a.s.l.; 8 Apr. 2014 • Jhulaghat; 29.5746°N

80.3826°E; alt. 590 m a.s.l.; 8 Oct. 2015 • Bin Block; Bans; 29.6082°N 80.1391°E; alt. 1400 m a.s.l.; 10 Feb. 2016 • Pithoragarh; 29.6206°N 80.2518°E; alt. 1670 m a.s.l.; 27 Feb. 2015 • Nakot; 29.6082°N, 80.1776°E; alt. 1690 m a.s.l.; 15 Mar. 2016.

***Gypaetus barbatus* (Linnaeus, 1758)**
Bearded Vulture
Figure 3G

Observations. INDIA • Uttarakhand; Pithoragarh district; Gangolihat block; Lali; 29.65849°N 80.0274°E; alt. 1720 m a.s.l.; 16 Nov. 2013 • Hanera; 29.6505°N, 80.0295°E; alt. 1800 m a.s.l.; 3 Dec. 2013 • Bin block; Nakot; 29.6091°N, 80.1771°E; alt. 1680 m a.s.l.; 10 Oct. 2015 • Bans; 29.6082°N 80.1391°E; alt. 1400 m a.s.l.; 10 Feb. 2016 • Pithoragarh; 29.6206°N 80.2518°E; alt. 1670 m a.s.l.; 27 Feb. 2015 • Munakot block; Munakot; 29.5588°N 80.2958°E; alt. 1530 m a.s.l.; 6 Apr. 2014.

***Aegypius monachus* (Linnaeus, 1766)**
Cinereous Vulture
Figure 3H

Observations. INDIA • Uttarakhand; Pithoragarh district; Gangolihat block; Futsil 29.6794°N, 80.0494°E; alt. 1720 m a.s.l.; 2 Oct. 2015 • Bin block; Pithoragarh; 29.5954°N 80.1997°E; alt. 1640 m a.s.l.; 20 Nov. 2015.

***Gyps himalayensis* Hume, 1869**
Himalayan vulture
Figure 3I

Observations. INDIA • Uttarakhand; Pithoragarh district; Gangolihat block; Lali; 29.6585°N 80.0274°E; alt. 1720 m a.s.l.; 16 Nov. 2013 • Kuntola; 29.6338°N, 79.9844°E; alt.790 m a.s.l.; 18 Nov. 2013 • Rawal gaon; 29.6610°N 80.0335°E; alt. 1760 m a.s.l.; 19 Dec. 2013 • Pali; 29.6595°N 80.0861°E; alt.1350 m asl.; 7 Mar. 2014 • Patal-bhuvaneshwar; 29.6865°N, 80.0907°E; alt. 1700 m a.s.l.; 12 Mar. 2015 • Bin block; Bans; 29.6082°N 80.1391°E; alt. 1400 m a.s.l.; 10 Feb. 2016 • Nakot; 29.6082°N, 80.1776°E; alt. 1690 m a.s.l.; 15 Mar. 2016 • Munakot block; Majirkanda; 29.5783°N, 80.3663°E; alt. 1340 m a.s.l.; 3 Apr. 2014 • Munakot; 29.5652°N, 80.2897°E; alt. 1500 m a.s.l.; 8 Apr. 2014 • Jhulaghat; 29.5746°N 80.3826°E; alt. 590 m a.s.l.; 4 Oct. 2015.

***Spilornis cheela* (Latham, 1790)**
Crested Serpent Eagle
Figure 3J

Observations. INDIA • Uttarakhand; Pithoragarh district; Bin Block; Nakot; 29.6089°N, 80.1799°E; alt. 1672 m a.s,l.; 10 Apr. 2015 • Jajurauli; 29.6177°N, 80.1331°E; alt. 1036 m a.s,l.; 11 May. 2015 • Bans; 29.6037°N, 80.1439°E; alt. 1536 m a.s.l.; 13 May 2016.

***Ictinaetus malaiensis* (Temminck, 1822)**
Black Eagle
Figure 3K

Observations. INDIA • Uttarakhand; Pithoragarh district; Bin block; Nakot; 29.6053°N, 80.1794°E; alt. 1755 m a.s.l.; 23 Mar. 2015 • Sintoli; 29.6084°N, 80.1686°E; alt. 1681 m a.s.l.; 16 Apr. 2015 • Pithoragarh; 29.5771 N, 80.1842°E; alt. 1659 m a.s.l.; 6 Feb. 2016 • Jagtar; 29.6028°N, 80.1602°E; alt. 1943 m a.s.l.; 16 Mar. 2016.

***Buteo hemilasius* Temminck & Schlegel, 1845**
Upland Buzzard
Figure 3L

Observations. INDIA • Uttarakhand; Pithoragarh district; Gangolihat block; Lali; 29.6560°N, 80.0265°E; alt. 1762 m a.s.l.; 18 Dec. 2013 • Hanera; 29.6478°N, 80.0286°E; alt. 1831 m a.s.l.; 17 Jan. 2014.

***Buteo burmanicus* Hume, 1875**
Himalayan Buzzard
Figure 4A

Observations. INDIA • Uttarakhand; Pithoragarh district; Gangolihat block; Lali; 29.6587°N, 80.0277°E; alt. 1720 m a.s.l.; 24 Nov. 2013 • Bin block; Gurura; 29.6119°N 80.1784°E; alt. 1630 m a.s.l.; 5 Feb. 2015 • Nakot; 29.6080°N, 80.1768°E; alt. 1700 m a.s.l.; 15 Apr. 2015.

Family Phasianidae

***Catreus wallichii* (Hardwicke, 1827)**
Cheer Pheasant
Figure 4B

Observations. INDIA • Uttarakhand; Pithoragarh district; Bin block; Gurura; 29.6255°N 80.1838°E; alt. 2020 m a.s.l.; 5 Feb. 2015.

***Lophura leucomelanos* (Latham, 1790)**
Kalij Pheasant
Figure 4C

Observations. INDIA • Uttarakhand; Pithoragarh district; Gangolihat block; Lali; 29.6603°N, 80.0277°E; alt. 1660 m a.s.l.; 22 Nov. 2013 • Simalkot; 29.6508°N, 80.0546°E; alt. 1550 m a.s.l.; 7 Dec. 2013 • Pali; 29.6501°N 80.0811°E; alt. 1150 m a.s.l.; 7 Mar. 2014 • Munakot block; Munakot; 29.5615°N 80.2948°E; alt. 1470 m a.s.l.; 8 Apr. 2014 • Bin block; Jajurauli; 29.6249°N 80.1246°E; alt. 710 m a.s.l.; 14 Apr. 2014 • Bans; 29.6114°N, 80.1523°E; alt. 1500 m a.s.l.; 10 Feb. 2016.

***Alectoris chukar* (Gray, JE, 1830)**
Chukar Partridge
Figure 4D

Observations. INDIA • Uttarakhand; Pithoragarh district; Munakot block; Majirkanda; 29.5822°N, 80.3683°E; alt. 1249 m a.s.l.; 1 Apr. 2014 • Bin block; Pithoragarh; 29.5869°N, 80.2675°E; alt. 1647 m a.s.l.; 25 May 2015 • Bans; 29.6042°N, 80.1417°E; alt. 1512 m a.s.l.; 28 Apr. 2016.

Figure 4. Birds recorded from the KSL-India (Pithoragarh district). **A.** *Buteo burmanicus*. **B.** *Catreus wallichii*. **C.** *Lophura leucomelanos*. **D.** *Alectoris chukar*. **E.** *Vanellus duvaucelii*. **F.** *Vanellus indicus*. **G.** *Streptopelia decaocto*. **H.** *Phalacrocorax carbo*. **I.** *Actitis hypoleucos*. **J.** *Strix leptogrammica*. **K.** *Glaucidium cuculoides*. **L.** *Picus squamatus*.

Family Charadriidae

***Vanellus duvaucelii* (R. Lesson, 1826)**
River Lapwing
Figure 4E

Observations. INDIA • Uttarakhand; Pithoragarh district; Bin block; Jajurauli; 29.6311°N, 80.1205°E; alt. 650 m a.s.l.; 22 Oct. 2015.

***Vanellus indicus* (Boddaert, 1783)**
Red-wattled Lapwing
Figure 4F

Observations. INDIA • Uttarakhand; Pithoragarh district; Munakot block; Munakot; 29.5591°N, 80.2957°E; alt. 1537 m a.s.l.; 7 Apr. 2014 • Bin block; Nakot; 29.6126°N, 80.1805°E; alt. 1626 m a.s.l.; 8 Jun. 2015 • Bans; 29.6138°N, 80.1478°E; alt. 1315 m a.s.l.; 17 Apr. 2016.

Family Columbidae

***Streptopelia decaocto* (Frivaldszky, 1838)**
Eurasian Collared Dove
Figure 4G

Observations. INDIA • Uttarakhand; Pithoragarh district; Bin block; Jajurauli; 29.6184°N, 80.141°E; alt. 1012 m a.s.l.; 13 Apr. 2016.

Family Phalacrocoracidae

***Phalacrocorax carbo* (Linnaeus, 1758)**
Great Cormorant
Figure 4H

Observations. INDIA • Uttarakhand; Pithoragarh district; Gangolihat block; Kuntola; 29.6411°N, 79.9720°E; alt. 629 m a.s.l.; 28 Mar. 2014 • Munkot block; Jhulaghat; 29.5721°N, 80.3689°E; alt. 575 m a.s.l.; 8 Apr. 2016.

Family Scolopacidae

***Actitis hypoleucos* (Linnaeus, 1758)**
Common Sandpiper
Figure 4I

Observations. INDIA • Uttarakhand; Pithoragarh district; Bin block; Jajurauli; 29.6282°N 80.1229°E; alt. 630 m a.s.l.; 28 Nov. 2015.

Family Strigidae

***Strix leptogrammica* Temminck, 1832**
Brown Wood Owl
Figure 4J

Observations. INDIA • Uttarakhand; Pithoragarh district; Bin block; Bans; 29.6147°N, 80.1634°E; alt. 1552 m a.s.l.; 16 Apr. 2016.

***Glaucidium cuculoides* (Vigors, 1830)**
Asian barred Owlet
Figure 4K

Observations. INDIA • Uttarakhand; Pithoragarh district; Gangolihat block; Lali; 29.6584°N, 80.0294°E; alt. 1739 m a.s.l.; 12 Nov. 2013 • Hanera; 29.6472°N, 80.0286°E; alt. 1821 m a.s.l.; 17 Dec. 2013 • Rawal gaon; 29.6567°N, 80.0476°E; alt. 1687 m a.s.l.; 19 Dec. 2013 • Pali; 29.6499°N, 80.0875°E; alt. 1360 m a.s.l.; 9 Mar. 2014 • Bin block; Bans; 29.6104°N, 80.1440°E; alt. 1350 m a.s.l.; 8 Oct. 2015 • Nakot; 29.6047°N, 80.1783°E; alt. 1767 m a.s.l.; 24 Feb. 2016.

Family Picidae

***Picus squamatus* Vigors, 1831**
Scaly-bellied Woodpecker
Figure 4L

Observations. INDIA • Uttarakhand; Pithoragarh district; Gangolihat block; Lali; 29.6601°N, 80.0280°E; alt. 1680 m a.s.l.; 22 Nov. 2013 • Bin block; Jagtar; 29.6015°N, 80.1574°E; alt. 1920 m a.s.l.; 25 Apr. 2014 • Bin block; Bans; 29.6097°N, 80.1525°E.; alt. 1600 m a.s.l.; 8 Oct. 2015.

***Dendrocoptes auriceps* (Vigors, 1831)**
Brown-fronted Woodpecker
Figure 5A

Observations. INDIA • Uttarakhand; Pithoragarh district; Gangolihat block; Lali; 29.6591°N, 80.0292°E; alt. 1710 m a.s.l.; 29 Oct. 2013 • Hanera; 29.6523°N, 80.0275°E; alt. 1770 m a.s.l.; 3 Dec. 2013 • Kuntola; 29.6319°N, 79.9853°E; alt. 830 m a.s.l.; 18 Nov. 2013 • Pali; 29.6499°N, 80.0875°E; alt. 1360 m a.s.l.; 7 Mar. 2014 • Boyal; 29.6360°N 80.1092°E; alt. 1020 m a.s.l.; 10 Mar. 2014 • Munakot block; Majirkanda; 29.5852°N, 80.3475°E; 1450 m a.s.l.; 3 Apr. 2014 • Bin block; Jajurauli; 29.6260°N, 80.1233°E; alt. 680 m a.s.l.; 14 Apr. 2014 • Bans; 29.6185°N 80.1497°E; alt. 1370 m a.s.l.; 10 Feb. 2016.

***Dendrocopos himalayensis* (Jardine & Selby, 1831)**
Himalayan Woodpecker
Figure 5B

Observations. INDIA • Uttarakhand; Pithoragarh district; Gangolihat block; Lali; 29.6588°N, 80.0285°E; alt. 1730 m a.s.l.; 24 Nov 2013 • Bin block; Jagtar, 29.6015°N, 80.1574°E; alt. 1920 m a.s.l.; 25 Apr. 2014.

Family Upupidae

***Upupa epops* Linnaeus, 1758**
Common hoopoe
Figure 5C

Observations. INDIA • Uttarakhand; Pithoragarh district; Bin block; Bans; 29.6131°N, 80.1489°E; alt. 1345 m a.s.l. 15 Mar. 2015 • Jajurauli; 29.6176°N, 80.1364°E; alt. 1025 m a.s.l.; 11 May 2015 • Nakot; 29.6121°N, 80.1816°E; alt. 1632 m a.s.l.; 8 May 2016.

Family Coraciidae

***Coracias benghalensis* (Linnaeus, 1758)**
Indian Roller
Figure 5D

Observations. INDIA • Uttarakhand; Pithoragarh district; Bin Block; Jajurauli; 29.6193°N, 80.1338°E; alt. 992 m a.s.l.; 11 Apr. 2016.

Family Alcedinidae

***Alcedo atthis* (Linnaeus, 1758)**
Common Kingfisher
Figure 5E

Observations. INDIA • Uttarakhand; Pithoragarh district; Bin block; Nakot; 29.6128°N, 80.1793°E; alt. 1624 m a.s.l.; 15 Mar. 2016 • Jajurauli; 29.6284°N, 80.1231°E; alt. 637 m a.s.l.; 2 June. 2016.

***Halcyon smyrnensis* (Linnaeus, 1758)**
White-throated Kingfisher
Figure 5F

Figure 5. Birds recorded from the KSL-India (Pithoragarh district). **A.** *Dendrocoptes auriceps*. **B.** *Dendrocopos himalayensis*. **C.** *Upupa epops*. **D.** *Coracias benghalensis*. **E.** *Alcedo atthis*. **F.** *Halcyon smyrnensis*. **G.** *Urocissa flavirostris*. **H.** *Garrulus glandarius*. **I.** *Garrulus lanceolatus*. **J.** *Terpsiphone paradise*. **K.** *Aethopyga ignicauda*. **L.** *Aethopyga siparaja*.

Observations. INDIA • Uttarakhand; Pithoragarh district; Gangolihat block; Lali; 29.6578°N, 80.0282°E; alt. 1736 m a.s.l. 18 Oct 2013 • Kuntola; 29.6322°N, 79.9846°E; Alt. 815 m a.s.l.; 18 Nov. 2013.

Family Corvidae

***Urocissa flavirostris* (Blyth, 1846)**
Yellow-billed Blue Magpie
Figure 5G

Observations. INDIA • Uttarakhand; Pithoragarh district; Gangolihat block; Lali; 29.6594°N, 80.0269°E; alt. 1710 m a.s.l.; 24 Nov. 2013 • Bin block; Bans; 29.6105°N, 80.1523°E; alt. 1557 m a.s.l.; 18 Nov. 2015.

***Garrulus glandarius* (Linnaeus, 1758)**
Eurasian Jay
Figure 5H

Observations. INDIA • Uttarakhand; Pithoragarh district; Bin block; Nakot; 29.6046°N, 80.1785°E; alt. 1775

m a.s.l.; 10 Oct. 2015 • Jagtar; 29.6028°N, 80.1602°E; alt. 1943 m a.s.l.; 16 Mar. 2016.

***Garrulus lanceolatus* Vigors, 1830**
Black-headed Jay
Figure 5I

Observations. INDIA • Uttarakhand; Pithoragarh district; Gangolihat block; Lali; 29.6594°N, 80.0269°E; alt. 1710 m a.s.l.; 24 Nov. 2013 • Hanera; 29.6534°N, 80.0261°E; alt. 1720 m a.s.l.; 2 Dec. 2013 • Rawal gaon; 29.6633°N, 80.0284°E; alt. 1560 m a.s.l.; 19 Dec. 2013 • Bin Block; Bans; 29.6082°N 80.1391°E; alt. 1400 m a.s.l.; 15 Apr. 2014 • Sintoli 28.6079°N, 80.1696°E; alt. 1690 m a.s.l.; 22 Apr. 2014 • Nakot; 29.6093°N, 80.1745°E; alt. 1660 m a.s.l.; 10 Oct. 2015 • Jajurauli; 29.6149°N 80.1343°E; alt. 1110 m a.s.l.; 13 Feb. 2016 • Munakot block; Majirkanda 29.5816°N, 80.3040°E; alt. 1330 m a.s.l.; 3 Apr. 2014 • Munakot; 29.5583°N, 80.2863°E; alt. 1470 m a.s.l.; 7 Apr. 2014.

Family Monarchidae

***Terpsiphone paradisi* (Linnaeus, 1758)**
Indian Paradise-flycatcher
Figure 5J

Observations. INDIA • Uttarakhand; Pithoragarh district; Munakot block; Majirkanda; 29.5806°N, 80.3655°E; alt. 1330 m a.s.l.; 3 Apr. 2014 • Bin block; Jajurauli; 29.6260°N, 80.1233°E; alt. 680 m a.s.l.; 14 Apr. 2014 • Bans; 29.6138°N, 80.1478°E; alt. 1315 m a.s.l.; 17 Apr. 2016.

Family Nectariniidae

***Aethopyga ignicauda* (Hodgson, 1836)**
Fire-tailed Sunbird
Figure 5K

Observations. INDIA • Uttarakhand; Pithoragarh district; Nakot; 29.6082°N, 80.17764°E; alt. 1690 m a.s.l.; 12 Mar. 2016 • Jagtar; 29.6028°N, 80.1602°E; alt. 1943 m a.s.l.; 16 Mar. 2016.

***Aethopyga siparaja* (Raffles, 1822)**
Crimson Sunbird
Figure 5L

Observations. INDIA • Uttarakhand; Pithoragarh district; Bin block; Bans; 29.6161°N, 80.1446°E; alt. 1178 m a.s.l.; 12 May 2015.

Family Motacillidae

***Motacilla maderaspatensis* J.F. Gmelin, 1789**
White-browed Wagtail
Figure 6A

Observations. INDIA • Uttarakhand; Pithoragarh district. Gangolihat block; Kuntola; 29.6411°N, 79.9720°E; alt. 629 m a.s.l.; 18 Nov. 2013 • Bin block; Jajurauli; 29.6279°N, 80.1229°E; alt. 631 m a.s.l.; 11 Apr. 2016

Family Fringillidae

***Carpodacus rodochroa* (Vigors, 1831)**
Pink-browed Rosefinch
Figure 6B

Observations. INDIA • Uttarakhand; Pithoragarh district; Gangolihat block; Lali; 29.6594°N, 80.0269°E; alt. 1710 m a.s.l.; 24 Nov. 2013 • Bin block; Bans; 29.6105°N, 80.1514°E; alt. 1534 m a.s.l.; 15 Dec. 2015 • Nakot; 29.6052°N, 80.1784°E; alt. 1753 m a.s.l.; 26 Dec. 2015.

***Procarduelis nipalensis* (Hodgson, 1836)**
Dark-breasted Rosefinch
Figure 6C

Observations. INDIA • Uttarakhand; Pithoragarh district; Bin block; Gurura; 29.6121°N 80.1790°E; alt. 1633 m a.s.l.; 5 Feb. 2015 • Nakot; 29.6052°N, 80.1784°E; alt. 1753 m a.s.l.; 7 Dec. 2015 • Bans; 29.6105°N, 80.1514°E; alt. 1534 m a.s.l.; 15 Dec. 2015.

Family Emberizidae

***Emberiza lathami* (Gray, JE, 1831)**
Crested Bunting
Figure 6D

Observations. INDIA • Uttarakhand; Pithoragarh district; Munakot block; Majirkanda; 29.5806°N, 80.3655°E; alt. 1330 m a.s.l.; 3 Apr. 2014 • Munakot; 29.5651°N, 80.2892°E; alt. 1499 m a.s.l.; 8 Apr. 2014 • Bin block; Bans; 29.6161°N, 80.1478°E; alt. 1300 m a.s.l.; 3 Feb. 2015 • Jajurauli; 29.6159°N, 80.1347°E; alt. 1082 m a.s.l.; 27 Jan. 2016.

Family Cisticolidae

***Orthotomus sutorius* (Pennant, 1769)**
Common Tailorbird
Figure 6E

Observations. INDIA • Uttarakhand; Pithoragarh district; Gangolihat block; Kuntola; 29.6329°N, 79.9841°E; alt.786 m a.s.l.; 18 Nov. 2013 • Bin block; Jajurauli; 29.6192°N, 80.1249°E; alt. 970 m a.s.l.; 12 Feb. 2016.

***Erythrogenys erythrogenys* (Vigors, 1831)**
Rusty-cheeked Scimitar Babbler
Figure 6F

Observations. INDIA • Uttarakhand; Pithoragarh district; Gangolihat block; Lali; 29.6591°N, 80.0292°E; alt. 1710 m a.s.l.; 29 Oct. 2013 • Pali; 29.6554°N, 80.0862°E; alt. 1270 m a.s.l.; 6 Mar. 2014 • Munakot block; Majirkanda; 29.5852°N, 80.3475°E; 1450 m a.s.l.; 3 Apr. 2014 • Munakot; 29.5615°N 80.2948°E; alt. 1470 m a.s.l.; 8 Apr. 2014 • Bin block; Bans; 29.6228, 80.1391; alt. 990 m a.s.l.; 14 Apr. 2014 • Nakot; 29.6082°N, 80.17764°E; alt. 1690 m a.s.l.; 12 Mar. 2016.

Figure 6. Birds recorded from the KSL-India (Pithoragarh district). **A.** *Motacilla maderaspatensis*. **B.** *Carpodacus rodochroa*. **C.** *Procarduelis nipalensis*. **D.** *Emberiza lathami*. **E.** *Orthotomus sutorius*. **F.** *Erythrogenys erythrogenys*. **G.** *Cyanoderma pyrrhops*. **H.** *Actinodura cyanouroptera*. **I.** *Tichodroma muraria*. **J.** *Sturnia malabarica*. **K.** *Saroglossa spiloptera*. **L.** *Cyornis rubeculoides*.

Family Timaliidae

***Cyanoderma pyrrhops* (Blyth, 1844)**
Black-chinned Babbler
Figure 6G

Observations. INDIA • Uttarakhand; Pithoragarh district; Munakot block; Majirkanda; 29.5806°N, 80.3655°E; alt. 1330 m a.s.l.; 3 Apr. 2014 • Munakot; 29.5585°N, 80.2866°E; alt. 1470 m a.s.l.; 7 Apr. 2014 • Bin block; Bans; 29.6161°N; 80.1478°E; alt 1300 m a.s.l.; 15 Apr. 2014 • Nakot; 29.6091°N, 80.1771°E; alt. 1680 m a.s.l.; 15 Apr. 2015 • Jajurauli; 29.6192°N, 80.1249°E; alt. 970 m a.s.l.; 12 Feb. 2016.

Family Leiothrichidae

***Actinodura cyanouroptera* (Hodgson, 1837)**
Blue-winged Minla
Figure 6H

Observations. INDIA • Uttarakhand; Pithoragarh

district; Bin block; Nakot; 29.6052°N, 80.1784°E; alt. 1753 m a.s.l.; 7 Dec. 2015.

Family Sittidae

***Tichodroma muraria* (Linnaeus, 1766)**
Wallcreeper
Figure 6I

Observations. INDIA • Uttarakhand; Pithoragarh district; Gangolihat block; Kuntola; 29.6411°N, 79.9720°E; alt. 629 m a.s.l.; 18 Nov. 2013 • Bin block; Pithoragarh; 29.5692°N, 80.2071°E; alt. 1561 m a.s.l.; 22 Feb. 2014 • Bans; 29.6142°N, 80.1424°E; alt. 1278 m a.s.l.; 16 Feb. 2016.

Family Sturnidae

***Sturnia malabarica* (J.F. Gmelin, 1789)**
Chestnut-tailed Starling
Figure 6J

Observations. INDIA • Uttarakhand; Pithoragarh district; Munakot block; Jhulaghat; 29.5747°N, 80.3798°E; alt. 620 m a.s.l.; 8 Apr. 2016.

Identification. It has grey head and upperparts with whitish forehead and throat, and yellow bill with bluish base.

***Saroglossa spiloptera* (Vigors, 1831)**
Spot-winged Starling
Figure 6K

Observations. INDIA • Uttarakhand; Pithoragarh district; Munakot block; Jhulaghat; 29.5747°N, 80.3798°E; alt. 620 m a.s.l.; 8 Apr. 2016.

Family Muscicapidae

***Cyornis rubeculoides* (Vigors, 1831)**
Blue-throated Flycatcher
Figure 6L

Observations. INDIA • Uttarakhand; Pithoragarh district; Bin Block; Gurura; 29.6204°N, 80.1807°E; alt. 1701 m a.s.l.; 12 May 2016.

***Enicurus scouleri* Vigors, 1832**
Little Forktail
Figure 7A

Observations. INDIA • Uttarakhand; Pithoragarh district; Bin block; Pithoragarh; 29.5869°N, 80.2675°E; alt. 1647 m a.s.l.; 25 May 2015.

***Monticola cinclorhyncha* (Vigors, 1831)**
Blue-capped Rock-thrush
Figure 7B

Observations. INDIA • Uttarakhand; Pithoragarh district; Gangolihat; Pali; 29.6539°N, 80.0912°E; alt. 1398 m a.s.l.; 7 Mar. 2014 • Boyal; 29.6360°N 80.1092°E; alt. 1020 m a.s.l.; 10 Mar. 2014 • Bin block, Pithoragarh; 29.6239°N, 80.2148°E; alt. 1794 m a.s.l.; 14 May 2015 • Jajurauli; 29.6192°N, 80.1249°E; alt. 970 m a.s.l.; 12 Feb. 2016.

***Ficedula superciliaris* (Jerdon, 1840)**
Ultramarine Flycatcher
Figure 7C

Observations. INDIA • Uttarakhand; Pithoragarh district; Bin block; Gurura; 29.6237°N, 80.1826°E; Alt. 1856 m a.s.l.; 5 Feb 2015 • Jajurauli; 29.6177°N, 80.1331°E; alt. 1036 m a.s,l.; 11 May. 2015 • Nakot; 29.6047°N, 80.1783°E; alt. 1767 m a.s.l.; 24 Feb. 2016 • Bans; 29.6037°N, 80.1439°E; alt. 1536 m a.s.l.; 13 May 2016.

***Ficedula tricolor* (Hodgson, 1845)**
Slaty-blue Flycatcher
Figure 7D

Observations. INDIA • Uttarakhand; Pithoragarh district; Gangolihat block; Pali; 29.6539°N, 80.0912°E; alt. 1398 m a.s.l.; 7 Mar. 2014 • Bin block; Bans; 29.6161°N; 80.1478°E; alt 1300 m a.s.l.; 15 Apr. 2014 • Gurura; 29.6237°N, 80.1826°E; Alt. 1856 m a.s.l.; 5 Feb 2015 • Jajurauli; 2014 29.6177°N, 80.1331°E; alt. 1036 m a.s,l.; 11 May. 2015.

***Saxicola caprata* (Linnaeus, 1766)**
Pied Bushchat
Figure 7E

Observations. INDIA • Uttarakhand; Pithoragarh district; Bin block; Jajurauli; 2014 29.6177°N, 80.1331°E; alt. 1036 m a.s,l.; 11 May. 2015 • Bans; 29.6042°N, 80.1417°E; alt. 1512 m a.s.l.; 28 Apr. 2016 • Munakot block; Jhulaghat; 29.5747°N, 80.3798°E; alt. 620 m a.s.l.; 8 Apr. 2016.

***Saxicola maurus* (Pallas, 1773)**
Siberian Stonechat

Observations. INDIA • Uttarakhand; Pithoragarh district; Gangolihat block; Lali; 29.6585°N 80.0274°E; alt. 1720 m a.s.l.; 16 Nov. 2013 • Pali; 29.6595°N 80.0861°E; alt.1350 m asl.; 7 Mar. 2014 • Patal-bhuvaneshwar; 29.6865°N, 80.0907°E; alt. 1700 m a.s.l.; 10 Mar. 2015 • Bin block; Jajurauli; 29.6167°N, 80.1329°E; alt. 1069 m a.s.l.; 27 Nov. 2015 • Nakot; 29.6052°N, 80.1784°E; alt. 1753 m a.s.l.; 7 Dec. 2015 • Bans; 29.6105°N, 80.1514°E; alt. 1534 m a.s.l.; 15 Dec. 2015.

Discussion

Earlier studies in the landscape by Tak (1995), and Sultana and Khan (2000) reported 82 and 162 species, respectively. Subsequent studies by Tak and Sati (2006) and an eBird compilation (until July 2020) listed 212 and 364 species, respectively, from Pithoragarh district, Uttarakhand. In comparison, our study recorded 205 species exclusively from the lower reaches of the landscape, highlighting the rich avifaun in the matrices of the landscape, as compared to previous studies which included a wider altitude range (Tak 1995; Sultana and Khan 2000;

Figure 7. Birds recorded from the KSL-India (Pithoragarh district). **A.** *Enicurus scouleri*. **B.** *Monticola cinclorhyncha*. **C.** *Ficedula superciliaris*. **D.** *Ficedula tricolor*. **E.** *Saxicola caprata*. **F.** *Saxicola maurus*.

Tak and Sati 2006). Due to seasonality and the wide elevation range of the Himalaya, several species migrate from higher to lower elevation areas and vice versa to achieve suitable habitat and food during fluctuations in temperature and other climatic conditions (Grimmett et al. 1998; Naithani and Bhatt 2010). We documented 63 migratory species, including winter, summer, and passage migrants. Our study area lies between the mid- to low-elevation ranges of the Himalaya, which supports winter migrants as well as summer migrants (Dixit et al. 2016).

Species such as *Spilopelia chinensis*, *Psilopogon virens*, *Psittacula himlayana*, *Urocissa erythrorhyncha*, *Corvus macrorhynchos*, *Pycnonotus leucogenys*, *Phylloscopus xanthoschistos*, and *Trochalopteron lineatum* are abundant and were mostly seen in agricultural lands and forest edges. All these species are resident in the study area and in nearby open agricultural lands; hence, the chances of encountering these species are higher. *Aquila nipalensis* and *Neophron percnopterus* were mostly observed soaring over agriculture lands, valleys, and open forests, or sometimes roosting near a garbage dump site, but *Chloris spinoides*, *Dicrurus leucophaeus*, *Lanius schach*, *Phylloscopus humei*, and *Eumyias thalassinus* were mainly recorded from the agricultural lands and forest edges. *Phylloscopus chloronotus*, *Arborophila torqueola*, and *Lophura leucomelanos* are also common, but they were mostly recorded from the forest interior or at forest edges.

Two species were first records from the Pithoragarh district. Both are water-dependent and rare in the study area. Three individuals of *Anas crecca* were recorded from the Ramganga River in winter. This species is a widespread winter visitor in India and mostly found in fresh and brackish water. These three individuals may have taken a brief stopover while migrating towards a large water body, because the birds were not present the next day in the same area. *Anas crecca* was previously recorded by Mohan et al. (2016), Saini et al. (2017), and Sinha et al. (2019) in the Himalayan foothills of Dehradun, Haridwar, and Rudraprayag, respectively, nearly 200 km west from our study area. The second species which was newly recorded from Pithoragarh district is *Amaurornis phoenicurus*, a resident species which is widely distributed in the Indian plains and mostly found near bodies of fresh water. We recorded it near streams in agricultural land. This species was previously reported from Dehradun district, in the Himalaya foothills, by Kumar and Kumar (2009) and Mohan et al. (2016) (200 km west of our study area) and about 130 km west in Garhwal Himalayas by Kukreti and Bhatt (2014). Most recently, it has also been recorded in the Terai arc region by Ahmed et al. (2019) from Nainital district, nearly 100 km south-west from the present record.

Our records of the avifauna come from underexplored field sites in community-managed land in Pithoragarh district, in contrast to the better-known upper reaches of the landscape. This could account for previous studies not finding the two species that were newly recorded by us. However, another possible reason could be that these species have expanded their range due to habitat conversion and climate change (Forero-Medina et al. 2011).

The presence of 11 globally threatened species (IUCN 2020), six Schedule I species under the Indian Wildlife (Protection) Act, 81 Himalayan endemic species (Birds of the World 2020), and a high percentage (nearly 30%)

of migratory species, indicate that the community-managed lands has a rich avifauna. This highlights the importance of niche requirements in the landscape matrix for transient and permanent resident bird species, despite the constant human presence. Detailed information on avifaunal community assemblages within these matrices in the western Himalaya are limited, and further exploration is needed, both qualitatively and quantitatively.

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Authors' Contributions

SKA: Field methodology, Formal analysis, Data Curation, Writing - original draft, Writing - review & editing. GVG: Conceptualization, Writing - review & editing, Supervision.

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